95. The apparatus of claim **64**, further comprising a stereoscopic microscope placed between the desired object and said holographic calibration plate.

96. The apparatus of claim **64**, further comprising a plate on which is imprinted a desired object to be identified.

97. (canceled)

98. The three-dimensional image scanner of claim **38**, wherein each of said plurality of pixels further includes a first portion having an associated filter which passes only optical mixer-generated pulses.

99. The three-dimensional image scanner of claim **38**, wherein each of said plurality of pixels further includes a second unfiltered portion which passes light reflected from the object.

100. The three-dimensional image scanner of claim **38**, wherein each of said plurality of pixels further includes a second portion having an associated filter which passes only colors reflected from the object.

101. The three-dimensional image scanner of claim **100**, wherein said associated filter is formed by a coating on said second portion of said plurality of pixels.

102. The three-dimensional image scanner of claim **98**, wherein said optical mixer includes a plurality of non-linear mixing elements, each of which is placed proximal to a corresponding one of said plurality of pixels.

103. The method of claim **62**, wherein said step of applying correction factors is performed electronically.

104. The apparatus of claim **66**, further comprising an optical shutter for blocking the desired wavelengths from entering the optical recorder during selected calibration intervals.

105. The apparatus of claim **67**, further comprising an optical shutter for blocking the desired wavelengths from entering the optical recorders during selected calibration intervals.

106. The apparatus of claim **69**, further comprising a mechanical shutter for blocking the desired wavelengths from entering the optical recorder during selected calibration intervals.

107. The apparatus of claim **70**, further comprising a mechanical shutter for blocking the desired wavelengths from entering the optical recorders during selected calibration intervals.

108. A method of rendering a three-dimensional image, comprising the steps of:

capturing a plurality of multi-dimensional images of a desired object from at least one multi-dimensional optical recorder such that each of the plurality of multi-dimensional images is captured from a different spatial orientation relative to the desired object,

using holographic calibration to combine the plurality of multi-dimensional images into a three-dimensional representation of the desired object;

sending the three-dimensional representation to a display; and

displaying a three-dimensional image of the desired object on the display by generating pulses from a plurality of ultra short optical pulse generators and controlling the pulse times of said pulses, such that said pulses coincide at voxels in a display volume when non-linear mixer elements occupy the voxels.

109. The method of claim **108**, wherein said step of capturing a plurality of multi-dimensional images further includes the step of capturing a plurality of two-dimensional images using at least one two-dimensional optical recorder.

110. The method of claim **108**, wherein said step of capturing a plurality of multi-dimensional images further includes a plurality of three-dimensional images using said at least one three-dimensional optical recorder.

111. The method of claim **108**, wherein said step of capturing the plurality of multi-dimensional images further includes the step of capturing -two-dimensional and three-dimensional images using a combination of two-dimensional and three dimensional optical recorders.

112. The method of claim **109**, wherein the at least one two-dimensional optical recorder captures color, texture, and shading data.

113. The method of claim **108**, wherein said step of sending the three-dimensional representation to a display further includes the step of sending the shape, color, texture, and shading data to the display.

114. The method of claim **113**, wherein said step of displaying further includes the step of utilizing the shape, color, texture, and shading data to control the pulse time of combinations of a plurality of ultra short optical pulse generators.

115. The method of claim **108**, wherein said step of using holographic calibration further includes the step of utilizing at least one holographic plate containing a common holographic calibration pattern to combine the two-dimensional images from the one two-dimensional optical recorder into the three-dimensional representation of the desired object.

116. The three-dimensional display of claim **108**, wherein said optical mixer includes a plurality of non-linear mixer elements.

117. The three-dimensional display of claim **6** or claim **116**, wherein each of said plurality of non-linear mixer elements further includes at least three sub-elements, each including a non-linear optical material.

118. The three-dimensional display of claim **117**, wherein each of said sub-elements is optimized to produce a desired optical wavelength.

119. The three-dimensional display of claim **118**, wherein said sub-elements are arranged such that no two types of sub-elements optimized for the same desired wavelength are adjacent to one another.

120. The three-dimensional display of claim **6** or claim **117**, wherein each of said plurality of non-linear mixer elements further includes an optically non-linear mixing material.

121. The three-dimensional display of claim **6** or claim **120**, wherein each of said plurality of non-linear mixer elements further includes a lens for improving cones of acceptance of said optical mixer sub-elements.

122. The three-dimensional display of claim **6** or claim **121**, wherein each of said plurality of non-linear mixer elements has a desired wavelength filter.

123. The three-dimensional display of claim **6** or claim **121**, wherein each said plurality of non-linear mixer elements has a diffuser for improving the viewing angle of said optical mixer.

124. The three-dimensional display of claim **123**, wherein said lens is hemispherical, square, rectangular, trapezoidal, triangular, polyhedral, or circular in cross-section.

125. The three-dimensional display of claim **122**, wherein each of said plurality of non-linear mixing elements has an optical reflector positioned adjacent to said lens.